

REMARKS

This paper is being provided in response to the Office Action dated August 9, 2007, for the above-referenced application. In this response, Applicant has amended claims 1, 3, 4, 8, 12, 19, 21, 22, 26 and 30 to clarify that which Applicant considers to be the presently-claimed invention. Applicant respectfully submits that the amendments to the claims are fully supported by the originally-filed specification.

The rejection of claims 1-36 under 35 U.S.C. 101 for nonstatutory subject matter is hereby traversed and reconsideration is respectfully requested. The Office Action states that "Determining the correctness of a component by calculating mathematical formulas is not statutory" and states that to be statutory under 35 U.S.C. 101, a claim must be directed to a practical application having a final result that is useful (specific, substantial and credible); concrete (substantially repeatable / non-unpredictable); and tangible (real world/ non-abstract). Applicant has amended the claims to clarify that a component is an implementation of a model and that randomly selected samples are from at least one test of the component. Applicant refers, for example, to page 43, line 6 to page 45, line 2 of the originally-filed specification and submit that that the final result of the presently-claimed invention is useful, concrete and tangible. Accordingly, Applicant respectfully submits that the rejection should be reconsidered and withdrawn.

The rejection of claims 1, 16-19, 34-36 under 35 U.S.C. 101 as lacking patentable utility is hereby traversed and reconsideration is respectfully requested. The Office Action appears to object to the use of a confidence value (δ) that is between 0 and 1, and its use in determining a

number of randomly selected samples M in the equation $M \geq \frac{1}{\epsilon} \ln\left(\frac{1}{\delta}\right)$, ultimately concluding that "infinity is less than infinity which makes no sense." Applicant respectfully submits that the above confidence value (δ) and selection of randomly selected samples does not yield the conclusion "infinity is less than infinity" so as to be senseless. The equation for selecting the number of randomly selected samples M does suggest that as the confidence value decreases, the number of randomly selected samples required by the claimed invention does increase, based on the natural log of one divided by the confidence value. The confidence value (δ) is specified as greater than 0 and less than 1, meaning $1/\delta$ is never infinity; however, as noted above, it does characterize an analysis that the smaller a confidence value, the higher the number of random samples required, as dictated by the above-noted equation. Applicant submits there is no arbitrary cutoff as the confidence value (δ) becomes smaller and smaller with respect to the number of randomly selected samples recited by the claimed invention, within the stated bounds that the confidence values is greater than 0 and less than 1, but that the relationship between confidence value and number of randomly selected samples is accurately characterized by the equations, and defines patentable subject matter in conjunction with the other recited features. Applicant submits that this would be well understood by one of ordinary skill in the art, and Applicant respectfully requests that the rejection be reconsidered and withdrawn.

The rejection of claims 1, 12, 19 and 30 under 35 U.S.C. 101 as lacking patentable utility is hereby traversed and reconsideration is respectfully requested. The Office Action appears to object to an accuracy level (ϵ) being between 0 and 1 and its use in determining a number of randomly selected samples M in the equation $M \geq \frac{1}{\epsilon} \ln\left(\frac{1}{\delta}\right)$, in an apparently similar rejection as

noted above with respect to the confidence value (δ), and ultimately concluding that "infinity is less than infinity which makes no sense." Similar to the discussion above, rather than a senseless conclusion concerning infinity, the above-noted equations characterize the analysis that the smaller an accuracy level the higher the number of random samples required. The accuracy level (ϵ) is specified as greater than 0 and less than 1, meaning $1/\epsilon$ is never infinity (or 1); however, as noted above, it does characterize an analysis that the smaller the accuracy level, the higher the number of random samples required, as dictated by the above-noted equation. Applicant submits there is no arbitrary cutoff as the accuracy level (ϵ) becomes smaller and smaller with respect to the number of randomly selected samples recited by the claimed invention, within the stated bounds that the accuracy level (ϵ) is greater than 0 and less than 1, but that the relationship between accuracy level and number of randomly selected samples is accurately characterized by the equations, and defines patentable subject matter in conjunction with the other recited features. Applicant submits that this would be well understood by one of ordinary skill in the art, and respectfully requests that the rejection be reconsidered and withdrawn.

The rejection of claim 1 under 35 U.S.C. 101 as lacking utility as stating "a probability of equal to or less than 6" is hereby traversed. The claim recites "and a probability that ($p \geq \epsilon$) is equal to or less than δ ". The "6" referred to in the Office Action is actually the confidence interval " δ ", as was filed, and as presently claimed. Accordingly, Applicant submits that this rejection should be reconsidered and withdrawn.

The rejection of claims 1-4, 8, 12, 19-22, 26 and 30 under 35 U.S.C. 101 as lacking patentable utility because of the use of a selected criterion F is hereby traversed and

reconsideration is respectfully requested. Applicant's selected criterion F is described in the specification (see, for example, beginning page 16, line 9) and recited in connection with a step of method for determining if each of the randomly selected samples is not in accordance with said selected criterion, F. Applicants disclose examples of selected criterion F in the specification and as recited in the dependent claims. For example, dependent claim 4 recites that the selected criterion F is that $e(x)$ evaluates to a value that exceeds predetermined bounds. Applicant submits that a step of determining if each of randomly selected samples is not in accordance with the selected criterion F is fully described and enabled by the specification and would be fully understood by one of ordinary skill in the art. Accordingly, Applicant respectfully requests that the rejection be reconsidered and withdrawn.

The rejection of claims 1-36 under 35 U.S.C. 112, first paragraph on the basis of the rejections under 35 U.S.C. 101 is hereby traversed. Applicant refers to the above discussion concerning the rejection under 35 U.S.C. 101 and submit that the claims recite statutorily patentable subject matter that is described in the specification and complies with the written description requirement. Accordingly, Applicant respectfully requests that the rejection be reconsidered and withdrawn.

The rejection of claims 1, 12, 19, 30 under 35 U.S.C. 112, first paragraph, with respect to the use of the probability p is hereby traversed. The Office Action states that in claims 1 and 19, the probability p is not in the formula 'm'. Assuming the Office Action's use of lower case 'm' refers to the number of randomly selected samples, M , then Applicant notes that M is defined as

$M \geq \frac{1}{\epsilon} \ln\left(\frac{1}{\delta}\right)$, and that ϵ represents an accuracy level of p -est to its true value p , in the range 0

$< \epsilon < 1$. Accordingly, the number of randomly selected samples M does incorporate the probability value p in determining the accuracy level ϵ . Furthermore, the Office Action states that in claims 12 and 30, 'p' is used in accordance to a selected criterion F . It is unclear what the objection is to this use of p as recited. In claims 12 and 30, p is defined as representing a probability that a randomly selected data value is in accordance with a selected criterion F ; p -est is an estimate of p based on a random sample; ϵ represents an accuracy level of p -est to its true value p , in the range $0 < \epsilon < 1$, wherein a probability that $(p \geq \epsilon)$ is equal to or less than δ ; and a number of randomly selected data values, M , wherein M is determined in accordance with p -est=0, δ , and ϵ . Applicants submits that the recited features are fully described and enabled by the specification (see, for example, page 14, line 5 to page 15, line 20 of the originally-filed specification) and would be fully understood by one of ordinary skill in the art. Accordingly, Applicant respectfully requests that the rejection be reconsidered and withdrawn.

The rejection of claims 4, 22 under 35 U.S.C. 112, first paragraph, as lacking a definition in the specification of the functions $e(x)$, $f(x)$ and $\phi(x)$ is hereby traversed. As noted beginning on page 13, line 20, $f(x)$ is a neural net trained to replace a known function $\phi(x)$ and, as noted beginning at page 16, line 1, $e(x)$ is an error function defined by $f(x) - \phi(x)$. As defined in the claim, x is one of said points corresponding to one or more neural network inputs, where (for each point x , evaluated at $f(x)$ and $\phi(x)$), $f(x)$ is a neural network output for a corresponding one of said points, and $\phi(x)$ is an expected output for a corresponding one of said points. Accordingly, an error function determination of $e(x)$ is based on evaluating, for each point x , the neural net function $f(x)$ and known function $\phi(x)$ that the neural net function is designed to replace, with the difference therebetween being the error function $e(x)$. Applicants submits that the claimed terms are fully described and enabled by the specification and that one of ordinary skill in the art would

appreciate the claimed features. Accordingly, Applicants respectfully request that this rejection be reconsidered and withdrawn.

The rejection of claims 1, 8, 19 and 26 under 35 U.S.C. 112, second paragraph, because of the use of the term "correctness" has been addressed by amendments contained herein. In accordance with the guidelines set forth in the Office Action, Applicants have replaced the term "correctness" with "accuracy"; noting, however, that the word accuracy, like the word correctness, is also a noun, which is the appropriate grammatical usage in the phrase: verifying accuracy, or correctness, of a component. Accordingly, Applicants request that this rejection be reconsidered and withdrawn.

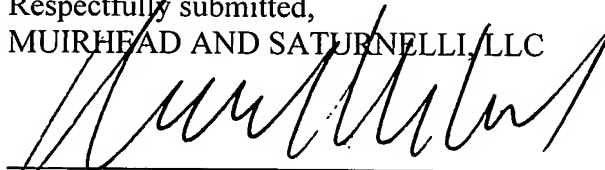
The rejection of claim 30 under 35 U.S.C. 112, second paragraph, as lacking antecedent basis for the term p is hereby traversed. Applicants have clarified the claim features as follows: receives a value of zero for p -est, an estimate of a probability p based on a random sample, p representing a probability that a randomly selected data value is in accordance with a selected criterion, F . Applicants note that p is recited as representing a probability that a randomly selected data value is in accordance with a selected criterion, F . Accordingly, Applicants submits that the term " p " has appropriate antecedent basis and respectfully requests that the rejection be reconsidered and withdrawn.

The rejection of claims 1-4, 8, 12, 19-22, 26, and 30 as being indefinite is hereby traversed. The term " F " is not an isolated term in the claims but rather is recited in the claims as a selected criterion F , and Applicants refer to the discussion above concerning the selected

criterion. Accordingly, the term "F" refers to "selected criterion F" as recited in the claims and Applicants have amended certain claims to make clear that F is used to recite the selected criterion F. Accordingly, Applicants submit that the term selected criterion F is not an indefinite term and respectfully requests that the rejection be reconsidered and withdrawn.

Based on the above, Applicant respectfully requests that the Examiner reconsider and withdraw all outstanding rejections and objections. Favorable consideration and allowance are earnestly solicited. Should there be any questions after reviewing this paper, the Examiner is invited to contact the undersigned at 508-898-8603.

Respectfully submitted,
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